

This page Is Inserted by IFW Operations
And is not part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of
The original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
Please do not report the images to the
Image Problem Mailbox.**

BEST AVAILABLE COPY

(19) FRENCH REPUBLIC
NATIONAL INSTITUTE OF
INDUSTRIAL PROPERTY
PARIS

(11) Publication number: **2 633 568**
(only to be used for reproduction-orders)

(21) National Registration No. **88 09365**

(51) Int. Cl.[illeg.]: **B 60 R 1/08; B 29 C 45/16, 67/22.**

(12)

PATENT APPLICATION**A1**

(22) Date of Filing: 1 July 1988

(30) Priority:

(43) Date on which application was made available to the public: BOPI "Brevets" [= "Patents"] No. 1 of 5 January, 1990

(60) References to other relevant national documents:

(71) Applicant(s):
The public limited company *HARMAN*
AUTOMOTIVE S.A. - FR.

(72) Inventor(s): Serge MARCHESI

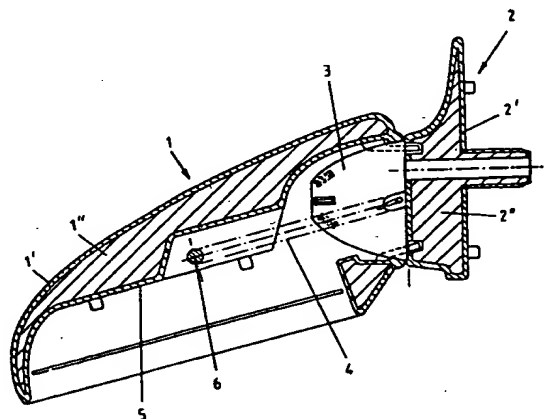
(73) Patentee(s):

(74) Representative(s): Pierre NUSS

(54) Rear View Mirror with Bi-Material Shell and Pedestal

(57) This invention concerns a rear view mirror comprising a shell 1 and a pedestal 2 mounted foldably on said shell 1, on guide-ribs 3 and on stop-ribs for the folded-back position, with maintenance of the in-service position and the folded-back position by means of a spring 4.

A rear view mirror characterized in that the shell 1 and the pedestal 2 are made in the form of monobloc elements, each being made of a rigid or non-rigid skin material 1', 2' and a filling-material 1'', 2'' which fills the spaces between the skin material 1', 2'; with the production of the shell 1 and pedestal 2 being performed by bi-injection.



Rear View Mirror with Bi-material Shell and Pedestal

This invention relates to the area of the manufacture of accessories for the automobile industry, particularly rear view mirrors, and has as its subject-matter a rear view mirror with a bi-material shell and bi-material pedestal.

State-of-the art rear view mirrors, particularly those with an electric or manual mechanism for adjusting the mirror, generally have shells consisting of a number of elements assembled together, in particular, separate mirror-surrounds. This form of manufacture is necessary to avoid the problems which would result from monobloc construction of the shells of the rear view mirror, in particular the formation of cracks due to shrinkage after moulding, which would result, moreover, in appearance-defects.

Thus shells have been made, consisting of a number of elements, whose manufacture entails an extra production cost and whose assembly results in the formation of visible joints, and in the necessity for welding, with the difficulties relating thereto; and therefore such manufacture results in considerable losses.

In addition, the tooling and equipment for assembling and welding these elements is generally costly. Moreover, the very design of state-of-the-art rear view mirrors of this type necessitates the provision of separate elements, particularly for supporting the mirror-adjusting mechanism, and for anchoring the devices that maintain the shell on the pedestal.

Furthermore, the pedestals of the shells known in the art are generally made in the form of hollow moulded pieces, and have inserts for mounting the pedestal on the vehicle door, said inserts being provided in suitable shafts; and said shafts, and the outer skin of said pedestal, being mutually connected and stiffened by the provision of moulded strengthening ribs. In this case, too, hollow moulding using a complex mould is necessary in order to avoid the formation of any cracks or appearance-defects, with the result that manufacture of the pedestals known in the art is likewise costly. Moreover, sealing the interface between the pedestal and the vehicle door is very difficult to achieve, due to the existence of hollow parts between the ribs and the periphery of the skin of the pedestal.

The aim of the invention is to overcome these drawbacks.

To this end, the subject-matter of the invention is a rear view mirror comprising a shell and a pedestal mounted foldably on said shell, characterized in that the shell and the pedestal are made in
5 the form of monobloc elements, each being made of a rigid or non-rigid skin material and a filling-material which fills the spaces between the skin material, the production of the shell and pedestal being performed by bi-injection.

The invention will be better understood from the following
10 description, which relates to a preferred form of embodiment, given by way example only without restricting the scope of the invention, and explained with reference to the diagrammatic drawing attached, whose sole Figure is a sectioned plan-view of a rear view mirror according to the invention.

15 The single Figure of the attached drawing represents a rear view mirror comprising a shell mounted on a pedestal 2 in such a way as to be able to be folded back on guide-ribs 3 and on stop-ribs for the folded-back position, and held in the in-service position and in the folded-back position by means of a spring 4.

20 According to the invention, the shell 1 and the pedestal 2 are each, advantageously, constituted by a rigid or non-rigid skin 1', 2' and a filling-material 1", 2" which fills the spaces between the skin material 1', 2', the two materials being injected simultaneously.

According to one characteristic of the invention, the skin
25 material 1', 2' is, advantageously, constituted by a rigid synthetic material such as a thermoplastic, and the filling-material 1", 2" is constituted by a light synthetic material which has weak mechanical characteristics or which is made lighter by foaming.

In a variant embodiment of the invention, the skin material 1',
30 2' is constituted by an elastically deformable material, and the filling-material 1", 2" is a rigid material.

The filling-material 1", 2" can also be a gas.

According to another characteristic of the invention, the
filling-material 1", 2" can be constituted partly by a synthetic or
35 other material, and by a gas, with the non-gaseous material being injected into specific places in the shell or pedestal.

Due to the possibility of injecting two or more materials of different consistencies and densities, the pedestal and, more particularly, the shell can be adapted to particular conditions, for example, the shell can have regions that are lighter and therefore have less inertia, particularly in the parts away from the vehicle-body, and can have heavier regions near the vehicle-body. Moreover, this form of embodiment also makes it possible to produce lightened parts, particularly in the case of relatively large-volume rear view mirrors, with the result that the problem of vibrations at high speed, necessitating one or more very strong return springs, can also be considerably ameliorated.

Finally, the making of the shell and the pedestal by bi-material injection, with a very rigid material as the skin-material, makes it possible to solve all the problems of wall thickness that normally occur, without any risk of forming cracks or surface faults due to shrinkage. This is of particular advantage when it comes to moulding the pedestal, which can have a closed surface which is applied to the vehicle body or door, with the space between the walls being filled, and the sealing of the pedestal on a planar wall being better ensured than in the case of state-of-the-art pedestals, whose side facing the vehicle-body has numerous stiffening-ribs (for stiffening the visible outer wall of the pedestal) and joining-ribs (for joining the elements for fixing the pedestal to the vehicle-body), and possibly also a feed-through shaft (for the control cables of the mirror-positioning mechanism).

In addition, the making of the shell and pedestal by bi-injection makes it possible to obtain parts with outer surfaces that are perfectly smooth for possible painting.

According to another advantageous characteristic of the invention, the support 5 for the mechanism, and also possibly the fixed part thereof, are provided directly, by moulding, in the shell cavity accommodating the mirror and the mirror control mechanism; said support 5 being provided, in addition, with the hooking-part 6 for the connecting-spring 4 between the shell 1 and the pedestal 2. Thus it is no longer necessary to provide, in the shell 1, separate elements, possibly made of materials other than those of which the

shell 1 is made, such elements instead being made directly and integrally with said shell 1.

Thanks to this manner of production, the moulds for making the shell and the pedestal are of much simpler structure and are
5 obviously cheaper to manufacture. Likewise, the fact of replacing the separate parts which have hitherto been required also makes it possible to considerably reduce the manufacturing cost of the rear view mirrors so produced, this cost also being reduced due to the fact that the number of separate parts, which necessarily have to be
10 the subject of a mounting operation, is reduced to a strict minimum.

Finally, the making of the shell 1 and the pedestal 2 by bi-injection also makes it possible to reduce the use of expensive materials to just those places where they are necessary, namely the skin and certain [other] places, for example the anchorage of the
15 spring, and the guiding places, and to fill the walls with air or another gas and/or relatively cheap materials - or even recycled materials.

Of course the invention is not limited to the manner of embodiment described and illustrated in the attached drawing; rather,
20 modifications remain possible, particularly as regards the making of the various elements, or by substitution of technical equivalents, without thereby going beyond the field of protection of the invention.

The claims defining the invention are as follows:

1. A rear view mirror comprising a shell (1), and a pedestal (2) mounted foldably on the shell (1), characterized in that the shell (1) and the pedestal (2) are made in the form of monobloc elements, each being made of a rigid or non-rigid skin material (1', 2') and a filling-material (1'', 2'') which fills the spaces between the skin material (1', 2'); with the production of the shell (1) and pedestal (2) being performed by bi-injection.
2. A rear view mirror as claimed in claim 1, characterized in that the skin material (1', 2') is, advantageously, constituted by a rigid synthetic material such as a thermoplastic, and the filling-material (1'', 2'') is constituted by a light synthetic material which has weak mechanical characteristics or which is made lighter by foaming.
3. A rear view mirror as claimed in claim 1, characterized in that the skin material (1', 2') is constituted by an elastically deformable material and the filling-material (1'', 2'') is a rigid material.
4. A rear view mirror as claimed in claim 1, characterized in that the filling-material (1'', 2'') is a gas.
5. A rear view mirror as claimed in claim 1, characterized in that the filling-material (1'', 2'') is constituted partly by a synthetic or other material, and by a gas, the non-gaseous material being injected into specific places in the shell and pedestal.
6. A rear view mirror as claimed in claim 1, characterized in that, advantageously, the shell (1) is provided with the mechanism-support (5) and also, if applicable, with the fixed part of the latter, directly by moulding, in the shell's mirror and control-mechanism accommodation cavity; said support (5) being provided, in addition, with the part (6) for hooking the spring (4) connecting the shell (1) and the pedestal (2).